

Applicant: Deckers et al.
Application Serial No.: 10/645,425
Filing Date: August 21, 2003
Docket No.: 1520-2 CIP/PCT/US
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Amendments to the Claims:

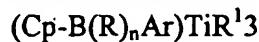
This listing of claims replace all prior versions and listings of claims in the subject application, and please amend the claims as follows:

Listing of Claims:

Claim 1. (currently amended) A process for the selective trimerization of olefinic compounds under trimerization conditions in the presence of a catalyst system, said process is effected by using a catalyst system comprising the steps of:

A) providing a catalyst system comprising:

A) a cyclopentadienyl titanium complex of formula



wherein

or

Cp is a cyclopentadienyl type ligand, cyclopentadienyl type ligand being substituted, and combination thereof.

B is a bridging group, based on a single atom selected from the groups 13 to

16 inclusive of the Periodic System,

an

or a

Ar is an aromatic group, substituted aromatic group, and combinations thereof,

R is, independently, hydrogen, a hydrocarbon residue, hydrocarbon being substituted, hydrocarbon containing heteroatoms, or groups R and B are joined together to form a ring,

n is an integer equal to the valency of B minus 2, and

R¹ is a mono-anionic group; and

B) b) an activator;

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B) providing olefinic compounds, wherein said olefinic compounds are selected from α group consisting of C_2 - C_{20} olefins and mixtures of two or more of these olefins; and

C) trimerizing said olefinic compounds in the presence of said catalyst system, ^{the} ^{wherein said process is effected at a pressure from 0.2 to 14 MPa}

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Claim 2. (currently amended) The process according to claim 1, wherein said process is effected at a temperature from 20-150°C, ~~at a pressure from 0.2 to 14 MPa, preferably 1.5 to 3 MPa.~~

Claim 3. (original) The process according to claim 1, wherein the single atom of B is selected from the group consisting of B, C, N, O, Si, P and S.

Claim 4. (currently amended) The process according to claim 1 wherein B is carbon or silicon;

Ar is phenyl, optionally substituted or being part of a larger aromatic entity
substituted phenyl, an aromatic entity, and combinations thereof,

R¹ is a halogen atom, mono-anionic hydrocarbon residue, mono-anionic hydrocarbon residue containing heteroatoms, and combinations thereof; and

n is 1 or 2, where n is 2, R is a mono-anionic hydrocarbon residue, mono-anionic hydrocarbon residue containing heteroatoms, and combinations thereof; and where n is 1, R is a di-anionic hydrocarbon residue, ^{or a} di-anionic hydrocarbon residue containing heteroatoms, ^{or a} and combinations thereof.

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Claim 5. (original) The process according to claim 1, wherein Cp is a cyclopentadienyl type ligand being substituted, besides said B-(R)_n group, with 1 to 8 groups of formula

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-YR₂R₃R₄ in which Y is C or Si and R₂, R₃ and R₄ are, independently, H, halogen, lower alkyl, aryl, lower-alkyl-aryl, aryl-lower alkyl residue, wherein said alkyl and aryl are independently substituted or not with one or more lower alkyl residues, said alkyl and aryl residues being independently provided or not with at least one heteroatom, selected from halogen, nitrogen, oxygen, sulfur and phosphorus.

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Claim 6. (original) The process according to claim 4, wherein said lower alkyl residues, being the same or different to each other, are linear or branched C₁-C₅ alkyl residues.

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Claim 7. (original) The process according to claim 4, wherein said aryl group in the lower-alkyl-aryl aryl-lower-alkyl residue is a phenyl group.

Claim 8. (original) The process according to claim 4, wherein said halogen is fluorine or chlorine.

Claim 9. (original) The process according to claim 1, wherein Ar is a phenyl group, substituted or not at the meta- or para-position; B is based on a carbon atom;

n is 1 or 2, where n is 2, R is, independently, methyl, or ethyl; and where n is 1, R is =CH₂, or forms when R is C₄H₈ or C₅H₁₀ together with group B a ~~diatomic~~ structure cyclic group; Cp is C₅H₄ or C₅H₃(SiMe₃), or C₅H₃(CMe₂Ph); and R¹ is chlorine, methyl, or benzyl.

Claim 10. (original) The process according to claim 1, wherein said titanium complex is supported on a carrier.

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Claim 11. (currently amended) The process according to claim 1, wherein said activator is methylalumoxane, a salt of a non-coordinating anion, or a Lewis acid generating a cationic transition metal species with ~~with~~ a non-coordinating anion capable of abstracting an anion from ~~said transition metal complex.~~

Claim 12. (original) The process according to claim 11 wherein the activator is methylalumoxane and the molar ratio of Ti:Al is from 1:100 to 1:1000.

Claim 13. (original) The process according to claim 1 wherein said catalyst system further comprises a scavenger.

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Claim 14. (original) The process according to claim 13, wherein said scavenger is selected from the group consisting of $i\text{-Bu}_2\text{Al}_2\text{O}$ and $(i\text{-Bu}_2\text{Al})_2\text{O}$.

Claims 15-27 (cancelled)

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Claim 28. (new) The process according to claim 2, wherein said process is effected at a pressure from 1.5 to 3 MPa.